

**BEST AVAILABLE COPY** Application No. 10/673,977REMARKSClaim Rejections Under 35 U.S.C. § 103

Claims 1-20, 22-41, 43-46 and 48-52 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Komiya et al., U.S. Patent NO. 4,164,913 in view of Dunn et al., U.S. Patent No. 4,140,096, and further in view of Garter et al., U.S. Patent No. 4,270,494.

When determining the differences between the prior art and the claims at issue, it is essential to view the claims at issue as "the invention as a whole." 35 U.S.C. § 103. It is legally improper to focus on the obviousness of substitutions and differences between the claimed invention and the prior art rather than on the obviousness of the claimed invention *as a whole* relative to that prior art.

While obviousness may be found by combining references, absent a suggestion to combine the references such combination is inappropriate. It is insufficient that the prior art discloses the components of the claims sought to be patented. A teaching, suggestion or incentive to make the combination is required for the combination of the art to demonstrate obviousness.

Claims 1-20, 22-41, 43-46 and 48-52 are not made obvious by Komiya in view of Dunn and Garter as the prior art does not teach the problem resolved, the Examiner has provided no motivation for modifying the Komiya reference in the manner suggested, and all of the limitations of the claims must be taken into account in determining obviousness.

Applicant notes that the claims recite structure or method steps forming the structure that include the combustion chamber being defined by a concave surface and three convex surfaces, adjacent surfaces having direct smooth junctures and that the combustion chamber is formed free of flat surfaces and, a certain two of the convex surfaces cooperatively forming a combustion chamber reentrancy.

Respectfully, the Examiner has failed to uncover any combustion chamber having such characteristics. Basically, Komiya has a reentrancy that is formed by a flat surface (11) and a convex surface (12a) joined at a connection (13). Moreover, the flat surface is a quadrilateral cavity that does not provide any reentrancy in the areas adjacent to the corners of the quadrilateral cavity (see Fig 2). Dunn has no description of the combustion chamber other

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than the lip. The combustion chamber of Dunn clearly has a flat bottom portion. The portion of the Dunn combustion chamber between the reference numerals 6 and 4 of Fig. 1 is flat if a straight edge is laid on the depicted surface. Accordingly, Dunn has at least one and most likely two flat surfaces in the depicted combustion chamber. Further, Dunn has a reentrancy at 4 that is formed by a concave (as distinct from the convex surfaces of the present claims) surface (the curved surface at 4 and the flat surface that extends between 4 and 6 in Fig. 1. Garter, although having no flat surfaces, has no reentrancy at all. The Applicant fundamentally disagrees with the Examiner that the Dunn and Garter references would possibly disclose, suggest or teach, much less motivate in any manner one of ordinary skill in the art to alter the Komiyama reference to form the combustion chamber being defined by a concave surface and three convex surfaces, adjacent surfaces having direct smooth junctures and being formed free of flat surfaces and a certain two of the convex surfaces cooperatively forming a combustion chamber reentrancy.

Further, the reference sought to be modified by Dunn (Komiyama) is also a combustion chamber having flat surfaces. Komiyama exceeds the number of flat surfaces found in Dunn by employing four flat surfaces. The surface of the combustion chamber noted in Komiyama by the reference numeral 11 is noted as being "the upper quadrilateral cavity". Such a cavity definitionally has four flat surfaces. Such surfaces are readily apparent in Figs. 2, 5, 9, and 10. There is no teaching in Komiyama that the "the upper quadrilateral cavity" may be anything other than four flat sided.

As should be readily apparent and would be clearly understood by one skilled in the art, Applicant respectfully notes that it would not be obvious to combine a four flat sided combustion chamber with a combustion has two flat side to get a combustion chamber having no flat sides.

The Garter reference includes a combustion chamber that appears to have a flat portion in the vicinity of the reference numeral 86 in Fig. 1. Further, the Garter combustion chamber has no reentrancy. Additionally, there is no motivation provided in Garter for combining the combustion chamber with anything. The only reference to the Garter combustion chamber is a single clause of a single sentence at col. 3, lines 57-66, that refers to a "recessed combustion bowl." There is absolutely no discussion in Garter of the combustion bowl beyond

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that simple reference. There is no motivation in Garter for the shape selected, much less combining the selected shape with any other combustion chamber.

Respectfully, Applicant submits that a basic problem with the Examiner's entire reasoning rests in his failure to consider the present invention "as a whole," a fatal error in ascertaining whether a claim is obvious or is not obvious. In determining obviousness, the invention must be considered as a whole and the claims must be considered in their entirety.

Applicant respectfully asserts that the Examiner has ignored the "invention as a whole," and impermissibly defines the problem in terms of its solution. Applicant respectfully submits that the Examiner has pointed to no motivation in the first place for altering the combustion chamber of the Komiyama reference with the combustion chambers of the Dunn and Garter references, other than the unsupported statement it would have been obvious to do so. There is clearly no disclosure, suggestion or teaching, much less any motivation, provided by the Examiner as being present in the Dunn and Garter references that would lead one skilled in the art to deviate from the conventional flat surfaces of the Komiyama and Dunn references.

In that regard, Applicant respectfully assert that the Examiner is using impermissible hindsight in defining the problem in terms of its solution in the selection of the prior art relevant to obviousness." None of the references applied disclose, suggest or teach that a problem exists in the conventional combustion chambers that might be solved by eliminating flat surfaces in the combustion chamber. A determination of obviousness is contraindicated when the applied prior art does not teach the problem or its source

Before the PTO may combine the disclosure of two or more prior art references in order to establish *prime facie* obviousness, there must be some suggestion for doing so." There must be some explicit teaching or suggestion in the art to motivate one of ordinary skill to combine the references in the manner suggested. To prevent the use of hindsight based on the invention to defeat patentability of the invention" the Federal Circuit "requires the examiner to show a motivation to combine the references that create the case of obviousness." Such motivation cannot be found simply by stating that one might choose curved combustion chamber surfaces simply because the selection might be found to be beneficial. If such was the case, every combustion chamber defined in terms of its characteristics would be unpatentable. This is clearly not the case.

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Respectfully, neither the Komiyama nor the Dunn references provide the requisite motivation for modifying the combustion chambers disclosed therein to eventuate in the embodiments set forth in the pending claims. As discussed above both the Komiyama and Dunn references employ multiple flat combustion chamber surfaces and Garter employs one flat surface. Thus, at best, the Komiyama, Dunn and Garter references teach away from the present claims.

Applicant respectfully asserts that there is no motivation for combining the three references in the manner suggested by the Examiner except for hindsight itself. Clearly, under the law, motivation for combining references cannot come from the invention itself.

Applicant respectfully submits that the Examiner has pointed to absolutely no basis in the art for combining or modifying the references and, in fact, the Examiner is using the Applicant's disclosure as a blueprint to reconstruct the claimed invention out of isolated teachings in the prior art. Specifically, Applicant fails to see where the Examiner has shown any motivation to combine the references to make his case for obviousness. More specifically, Applicant submits that the Examiner has failed to set forth any of the three possible sources for such motivation, and that the Examiner has not identified the nature of the problem to be solved, the teachings of the prior art and the knowledge of persons of ordinary skill in the art that would lead a person of ordinary skill in the art to the claims as presently recited and an action acknowledging same as respectfully requested.

**CONCLUSION**

Claims 1-20,22-41, 43-46 and 48-52 are pending. By this Amendment, no claims are cancelled, claims 1, 2, 22, 23, and 43 are amended and no new claims are added.

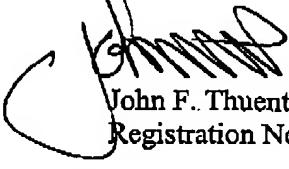
In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

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The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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